



## Filing Receipt

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**PROJECT NO. 52373**

<b>REVIEW OF WHOLESALE ELECTRIC MARKET DESIGN</b>	<b>§ §</b>	<b>PUBLIC UTILITY COMMISSION OF TEXAS</b>
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**PROJECT NO. 53298**

<b>WHOLESALE ELECTRIC MARKET DESIGN IMPLEMENTATION</b>	<b>§ §</b>	<b>PUBLIC UTILITY COMMISSION OF TEXAS</b>
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**POTOMAC ECONOMICS' FIRM FUEL SUPPLY  
SERVICE RECOMMENDATIONS**

Potomac Economics (Potomac), the Independent Market Monitor (IMM) for the wholesale market in the Electric Reliability Council of Texas, Inc. (ERCOT) region, appreciates the opportunity to file these comments regarding the implementation of the Firm Fuel Supply Service (FFSS) in Project No. 52373, *Review of Wholesale Electric Market Design* and Project No. 53298, *Wholesale Electric Market Design Implementation*.

Senate Bill 3 requires the Commission to develop a fuel service to ensure winter performance for several days. While Potomac is not commenting here on the necessity of such a service, we offer the following comments in our role as IMM regarding its implementation to maximize its effectiveness and minimize unnecessary cost to consumers. These comments address three fundamental aspects of the service: which resources should be eligible to sell it, how it should be cleared and procured, and options for the quantity to procure.

## **A. ELIGIBILITY TO SELL FFSS**

In defining any service and the resources that may provide it, one should first define the reliability objective. This objective should guide the eligibility determination because it will generally maximize the competition to supply the service and allow the Independent System Operator (ISO) to satisfy the reliability objective at the lowest cost, which rarely results in eligibility being limited to resources that operate on one particular fuel. In the case of FFSS, for example, a reasonable eligibility definition that is aligned with the reliability objective might include: *any generation resource that can operate for at least 72 hours during a disruption of the bulk natural gas delivery system*. Any such resources that can operate continuously during natural gas curtailments contributes to reliability during such an event. Compensating them in a non-discriminatory manner will maximize their availability and address help address the concerns identified in Senate Bill 3.

Some may argue that the FFSS should, to the maximum extent possible, motivate incremental actions by resource owners that they would not have taken absent the FFSS service. For example, gas-fired resources that have dual fuel capability may find it economic to procure and store a limited amount of back-up fuel because it is not needed for normal operation. In this case, the FFSS could result in increased back-up fuel inventories and a greater ability of the system to respond to gas disruptions. The same may not be true of solid fuel resources that must procure non-gas fuel to operate under normal conditions and are less likely to undertake incremental actions in the short-term in response to selling FFSS. Under this rational, an eligibility definition that omits solid fuel resources could be: *any gas-fired resource that can operate for at least 72 hours during a disruption of the bulk natural gas delivery system*.

We do not recommend narrowing the definition further than this, which would include offsite fuel storage coupled with firm delivery contracts. Including the widest possible eligibility is advantageous because it will significantly expand the supply of resources, which will:

- Lower the cost of procuring any given quantity of FFSS; and
- Improve the competitiveness of the market for FFSS by lowering the ownership concentration of eligible resources. This is particularly important given the existing dual fuel ownership concentration, discussed below in section C.

We do not believe administering such an eligibility definition will be burdensome because it will not be necessary to carefully define additional eligibility provision or to review specific gas contracts for delivery of offsite fuel storage. The market incentives and penalties should be sufficient to ensure that only suppliers that have made reasonable arrangements and are confident in their ability to satisfy the FFSS performance obligations will offer to sell the service. Requiring additional assurances or auditing creates a regulatory and administrative burden that will not likely increase reliability but may in fact contribute to higher offer prices for FFSS and higher costs to consumers.

## **B. PRICING AND SETTLEMENTS FOR FFSS**

Consistent with all the other products and services procured by ERCOT, the IMM recommends a single clearing price by determined for FFSS and paid to all FFSS suppliers. The alternative to a uniform clearing price market would be a “pay-as-bid” market. Pay-as-bid markets are well known to produce inefficient and generally more costly outcomes as suppliers seek to estimate the highest bid that will be accepted in the auction. Hence, suppliers lose the incentive to offer at prices reflecting their marginal costs, which occurs in uniform clearing price auction. This process of forecasting the price of the highest accepted offer as the basis for

determining the offers for resources results in some economic resources not being procured and some uneconomic resources being procured. Ultimately, this can raise the total costs of the service and reduce the benefits it provides. Therefore, we recommend that ERCOT adopt a uniform clearing price for the FFSS.

### **C. SERVICE QUANTITY AND OTHER PROVISIONS**

An auction with a well-formed demand curve that reflects the marginal reliability value of the service will produce the most efficient outcomes for any electric product. It would determine the quantity of the product procured based on the offer prices of the suppliers and provide inherent cost controls that will help mitigate market power by suppliers of the product. However, it is likely infeasible to develop such a demand curve prior to the Request for Proposal (RFP) procurement in August 2022 given the administrative complexities of specifying and applying the curve, but this may be reconsidered for future years of FFSS procurement. We discuss potential short-term options for specifying the demand for FFSS and other key provisions in this section.

#### ***The Demand/Requirement for FFSS***

In considering the demand to specify for the FFSS, it is important to consider the available supply to satisfy the demand. In this regard, the relevant portions of ERCOT's survey results regarding fuel storage state indicate that there are:

- 4,441 MW of existing dual fuel capable generation resources with on-site alternative fuel storage, three-quarters of which is owned by one participant.
- 2,119 MW of dual fuel capable generation resources that would require various amounts of capital investments to be viable; and
- 796 MW of natural gas storage where the pipeline to the storage facility is owned or controlled by the generation resource.

The IMM recognizes that the Commission may desire to clear a quantity of FFSS that is near the existing built quantity of a more limited eligibility requirement that would exclude offsite storage with firm delivery contracts. However, this issue is complicated by the fact that the existing built quantity is highly concentrated in one market participant who owns three quarters of the operable dual fuel capability.<sup>1</sup> Excluding the resources with direct firm access to offsite natural gas storage would make the market much less competitive, regardless of the demand quantity selected and would reduce the reliability benefits of the FFSS procurement. Therefore, we recommend the Commission allow the resources with direct firm access to offsite natural gas storage to be eligible to provide FFSS. Assuming this supply is included, we recommend that the Commission select a demand quantity that is lower than the total potential available demand to ensure the competitiveness of the procurement. This is particularly important given the concentration of ownership of existing dual fuel capability noted above. Although there is no one optimal procurement quantity, we believe a targeted procurement of 4,000 MW in the first year would be reasonable and consistent with the principle described above.

### ***Mitigation Recommendation***

As discussed above, the quantity procured will play an important role in determining the competitiveness of the procurement. If the demand is much less than the available supply, it will be more difficult for supplier to withhold resources and raise prices. Nonetheless, the largest potential supplier of FFSS is likely to be pivotal at any reasonable procurement level, which would allow it to raise the price of the FFSS significantly and/or reduce the quantity of FFSS that ERCOT is able to procure if a budget cap is utilized alone. Therefore, we recommend the

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<sup>1</sup> [http://interchange.puc.texas.gov/Documents/52373\\_348\\_1193311.PDF](http://interchange.puc.texas.gov/Documents/52373_348_1193311.PDF).

Commission establish a reasonable offer price cap that would limit pivotal suppliers' ability to raise prices.

One possible option is to cap the offer for each resource at the cost of procuring the fuel associated with either 48 or 72 hours of maximum output (consistent with the Commission's final definition of the product). This should be well above any supplier's competitive offer price because a competitive supplier would offer at a lower price than this to the extent that it would have procured some or all of this fuel absent the FFSS procurement. For example, since the economic incentives associated with ERCOT's shortage pricing motivates a supplier to fill its on-site fuel oil tanks, it may be positioned to provide FFSS without having to incur any substantial costs.

Therefore, we recommend an offer cap of \$18,000/MW for a 48-hour duration requirement or \$27,000/MW for a 72-hour duration requirement. This represents a heat rate of 15 (likely the highest heat rate of potential resources)<sup>2</sup> multiplied by recent Fuel Oil Prices (FOP) as defined in the ERCOT Protocols. Based on a 120-day procurement, this approach results in a capacity reservation payment of \$6.25/MW-h, higher than the 2021 time- and capacity-weighted ERS capacity reservation payment price of \$5.34/MWh. The conservative heat rate multiplier will provide a cushion for fluctuating fuel oil prices and other costs associated with providing the service. Below is a table showing offer cap values at various heat rate multipliers and FOP values.

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[https://www.ercot.com/files/docs/2021/11/12/Aggregated\\_Offer\\_Curves\\_Analysis\\_for\\_NPRR1091\\_and\\_1092\\_Discussion.pdf](https://www.ercot.com/files/docs/2021/11/12/Aggregated_Offer_Curves_Analysis_for_NPRR1091_and_1092_Discussion.pdf)

<b>Heat Rate (MMBtu/MWh)</b>	<b>FOP (\$/MMBtu)</b>	<b>Offer Cap for 48 hr (\$/MW)</b>	<b>Offer Cap for 72 hr (\$/MW)</b>
10	\$ 22	\$ 10,560	\$ 15,840
10	\$ 25	\$ 12,000	\$ 18,000
10	\$ 28	\$ 13,440	\$ 20,160
12	\$ 22	\$ 12,672	\$ 19,008
12	\$ 25	\$ 14,400	\$ 21,600
12	\$ 28	\$ 16,128	\$ 24,192
15	\$ 22	\$ 15,840	\$ 23,760
15	\$ 25	\$ 18,000	\$ 27,000
15	\$ 28	\$ 20,160	\$ 30,240

### ***Requirements and Limitations***

Finally, even with the mitigation measure described above, the costs of the FFSS procurement will be highly uncertain. Additionally, the incremental actions that will be motivated by the service beyond those incentivized by the current energy-only market signals are also uncertain. For these reasons, we recommend the Commission establish a budget cap (similar to the Emergency Response Service (ERS) budget cap).

Setting an appropriate budget cap level must balance the objective of the procurement with its costs. Consistent with the mitigation option described above, the Commission could establish a budget cap equal some fraction of the estimated costs of procuring sufficient oil to operate 4,000 MW of typical dual-fueled natural gas resources for 72 hours. If the fraction in this approach is set close to 100%, it is unlikely that the budget cap would bind because competitive offers should be well below the full costs of procuring the fuel. Adding a budget cap would allow additional MWs to be procured above the minimum requirement in the case where competitive offers lower the total cost of procurement. We recommend \$54 million if a 48-hour duration is established and \$81 million for a 72-hour duration. This represents 75% of the cost of procuring 4,000 MW at the proposed offer caps above (\$18,000/MW for a 48-hour duration requirement or \$27,000/MW for a 72-hour duration requirement). Given the time constraints for implementing the program and the uncertainties related to pricing and participation in the



program, we believe the most reasonable approach is to establish an offer cap per MW, a total budget cap, and a target procurement quantity that is significantly less than the total amount of potential supply. If the Commission allows resources with offsite storage and firm delivery contracts to sell FFSS, then a procurement target of 4,000 MW or slightly higher would be reasonable, as previously discussed. Such implementation could be considered a “pilot” for the first year of FFSS and would provide discovery of how many MWs of capacity are available and willing to participant, the offer prices associated with different classes of resources, and the pricing of the FFSS service. Such discovery would allow adjustments to be made in future years to the budget cap and/or procurement quantities.

If significant MWs are desired or cleared, OBDRR039, ORDC Changes Related to NPRR1120, Create Firm Fuel Supply Service, should be reconsidered and a reevaluation of the pricing implications of deployment with a more significant quantity conducted. In this scenario, an offer floor during deployment may be a more reasonable approach to ensuring that non-eligible but producing generators are not adversely affected by the FFSS capacity payments.

#### **D. BUDGET BENCHMARKS**

Benchmarking FFSS prices presents a challenge. FFSS is not a general capacity market service; instead, it is targeted for natural gas curtailment events. As such it not directly comparable to capacity products in other ISOs and Regional Transmission Organizations (RTOs). The closest analog in any of the ISO markets is the Winter Reliability Program that had been operated by ISO New England. The outcomes of the FFSS could be compared to the costs and production potential of the payments made under this program, although the structure and objectives of the FFSS are not completely consistent with the Winter Reliability Program.

We recommend that an evaluation of FFSS be conducted to estimate the reliability value of the service in avoiding loss of load events. The evaluation would involve identifying the incremental actions taken by suppliers that are likely attributable to the FFSS procurement, and then determining the decrease in the loss of load expectation (LOLE) due to these actions. It will also allow the Commission to determine the cost-effectiveness of the program on an annual basis.

#### **E. CONCLUSION**

Potomac appreciates the opportunity to share these recommendations as requested by the Commission and looks forward to continued participation in this market redesign implementation effort.

Respectfully submitted,

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